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THE LOG OF THE LAB

Items of Current Research

FOREST PRODUCTS LABORATORY* FOREST SERVICE

U. S. DEPARTMENT OF AGRICULTURE

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FROM ASHES TO ASSETS

A TREE that propagates by the aid of forest fires is described by Forest Service and University of Minnesota investigators in a new bulletin entitled "Aspen: Its Availability, Properties, and Utilization." Aspen, or "popple," because of its hard-boiled growth habits has in many quarters acquired the reputation of a weed tree and worse.

When Hercules slew the many-headed monster, he had to sear each neck stump with fire to keep new heads from sprouting. If Hercules were fighting popple in the north woods, he would have to think of something else to do besides chop and burn, because he would merely be helping the so-called weed to spread, according to the new bulletin, which says:

"In the old growth forest, before cutting and slash fires, aspen must have been an uncommon and inconspicuous constituent of the . . . white pine and spruce forests. As cuttings and fires removed the old growth and incidentally destroyed the few existing aspens, suckers came up from the

roots in a radius of 25 or 30 feet around each of the stems that had been destroyed, and with 20 to 30 suckers to a stem. Every fire that burned over the area thus increased the density of the area of the aspen in the new crop. Almost all of the enormous area of aspen in the northern Lake States to-day has resulted from repetitions of this process."

Because aspen in its younger stages looks like brush rather than woods, any values it may possess are slighted, and thousands of the 21,000,000 acres of "popple" lands are being forfeited for taxes every year in northern Michigan, Wisconsin, and Minnesota.

Yet Forest Products Laboratory tests and commercial practice clearly demonstrate the suitability of aspen wood for boxing and crating material, core stock, certain types of dimension, excelsior, pulpwood, and a variety of small manufactures for which its properties may be fairly compared to those of basswood and yellow poplar.

The match supply of Europe to-day is largely the product of aspen. In America, over 400,000

* Maintained at Madison, Wis., in cooperation with the University of Wisconsin

cords of aspen go into paper pulp each year, and with the improvements in pulping processes that are now under development, the chances are that much more can be used in the future.

Listing more than 100 past, present, or potential uses for this weed-wood, the authors present, on the whole, an optimistic outlook on the aspen question. The Laboratory, which cooperated in this study with the University of Minnesota and the Lake States Forest Experiment Station, has 500 copies of the bulletin for free distribution on request.

"CERTIFIED SLIVERS"

Following publication in the November LOG of an article on the Sliver Machine as a means of wood moisture control, numerous requests for further advice on construction and use of the machine led the Laboratory to prepare for free distribution a batch of wood strips certified to weigh 100 grams each when oven dry. A number of these have been sent out. Others are still available and may be obtained upon request as long as the supply lasts. One of these strips or "slivers" is simply hung to the suspension hook on one side of a scale or balance and is weighed up whenever a check of drying conditions is wanted, as explained in the November issue.

BELIEVE IT NOT

The Mythology of Wood

The Forest Products Laboratory, through correspondence and encounters with a wood-using world, has naturally come in contact with the myths of wood utilization as well as with the body of sound, provable facts. Some of the beliefs that the Laboratory has been obliged to refute—such as the idea that fence posts will "work out of the ground" if not set at the right phase of the moon—are obviously absurd, but others are apparently credible and quite widely held. Some of the more plausible will be dealt with in this and subsequent issues of the Log, as for instance:

1. *THE FALLACY that wood in construction is under all conditions more dangerous than steel in case of fire.*

It is true that wood soon becomes charcoal when heated to about 572° F., and that steel is little affected at such temperatures. But wood has one tremendous advantage in that it is a poor conductor of heat, so that the outside of large beams or thick planks may burn or char while the inside retains its strength. Steel in the same fire and carrying the same load is very rapidly heated through, and not infrequently loses its strength and drops its load sooner than wood.

2. *THE FALLACY that wood can be fireproofed so that it will not burn or char at high temperatures.*

This notion, although the virtual opposite of No. 1, is nevertheless a mistake. The fireproofing of wood does not change its chemical nature, and if it is heated sufficiently it will char and give

off combustible tars and gases. The advantage of fireproofing is that it greatly reduces the rate of burning and thus tends to keep wood from contributing enough heat to support its own combustion. (To be continued)



TWENTY HAD TIME

The six-day course of instruction in boxing and crating practice announced in the November LOG has come to a successful conclusion.

Twenty men (the maximum accepted in one class) were sent to Madison by firms and organizations who believed that as a result of the time spent in getting increased knowledge of boxing and crating and transportation hazards they would be able to lower distribution costs, secure a larger share of business now available, and be prepared for increased business when a general revival comes.

One man came from Havana to take the course; two were present from Australia. Not represented at the course was one box company which had had one or more men at each of the 32 previous courses. Those in attendance and their connections were:

W. L. Greenhill and I. Langlands, Commonwealth of Australia; L. B. Kramer, Bureau of Explosives, New York City; D. N. Protsman, Dodge Manufacturing Corporation, Mishawaka, Ind.; R. D. Franklin, B. F. Goodrich Co., Akron, Ohio; Emil Radtke, Hamilton Manufacturing Co., Two Rivers, Wis.;

H. C. Barry, Insurance Company of North America, Chicago, Ill.; C. S. Adamshick, P. T. Swisher, and L. M. Alexander, The Martin Bros. Barrel, Box & Lumber Co., Toledo, Ohio; L. R. Smith and A. M. Reed, Owens-Illinois Glass Co., Toledo, Ohio; V. Ramon Perez, Perez Hermanos, Havana, Cuba; G. E. Findon, Picatinny Arsenal, Dover, N. J.; W. L. Romney, The Procter & Gamble Co., Ivorydale, Ohio; W. B. Schoeneman, Rundle Manufacturing Co., Milwaukee, Wis.; Joseph Lebl, Sears, Roebuck & Co., Chicago, Ill.; Edw. A. McGinn, U. S. Veterans' Bureau, Chicago, Ill.; J. T. Willard, Vacuum Oil Co., New York City; William Conn, Vacuum Oil Co., Bayonne, N. J.

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ONE OF THE FEW BASIC CHANGES in the mechanics of processing fiber for paper in recent times is the development by the Forest Products Laboratory of the rod mill as a means of beating or refining pulp. The rod mill, a rotating drum containing many heavy metal bars that roll and skid over one another, is an appliance long known and used in the mineral industries. Successfully adapted by the Laboratory to the treatment of a wide variety of pulps, it is economical in the consumption of power, continuous and almost wholly automatic in operation.

Latest information is to the effect that 37 or more of these machines are now in commercial production in the pulp and paper industry.

A BIG TREE FROM B. C.

SINCE publication of the August 30 issue of the LOG containing comment on the largest authentic measurements of big trees, Mr. Bernard Brereton of Seattle has sent in a clipping from the *British Columbia Lumberman* of March, 1927, reproducing a bona fide photograph of part of a felled tree of vast proportions under the title "An Enormous Douglas Fir," with the following description:

"By courtesy of Mr. O. L. Mullett we are enabled to publish a picture of a phenomenal log cut in the vicinity of Vancouver in the pioneer days of the B. C. logging industry. This tree, from which this log was cut, was 471 feet high and 25 feet through at the butt and 9 feet through 200 feet from the butt. The bark was 16 inches thick. The tree was 300 feet high to the first limb, a veritable giant among the kings of the forest!"

If these measurements are correct, this was not only a king of the forest but by all means the grand imperial monarch of all known trees, beating the previously accredited record by over 100 feet. Unfortunately, the picture showed only about 40 feet of the butt, so that no present estimate of the height can be made as a check. From the relative size of the people seen grouped on and about the log, however, it is hard to make out a butt diameter as large as 25 feet; it looks more like 18.

At any rate, the tree was a monster, whether or not the dimensions are correct as stated. How it was cut up and milled is an interesting speculation

in itself. The Laboratory is making efforts to verify the facts in the case, but the tree fell years ago, and a circumstantial record may be hard to come by. If any of our readers have facts to contribute on this or other big trees, we shall be glad to receive them, as we are endeavoring to get together as complete a record as possible of these world wonders.



SWELLING AND SHRINKING OF WOOD has been put to a rather particular use at the Forest Products Laboratory. A strip of veneer with grain running crosswise is bent like a bow and its ends are mounted a fixed distance apart in a frame. The bow bulges or flattens to a marked degree when the strip undergoes even a slight moisture change. At the middle point of the bow is an electrical contact point, which makes and breaks connection with steam control apparatus.

This simple hook-up is used in Laboratory kilns and humidity chambers to keep drying conditions constant.

For three months the arrangement has been throwing switches with clock-like precision and reliability. The idea of using wood as the control element in humidity regulating apparatus is well known. The special adaptation of a very thin strip in the form of a bow with grain crosswise is, so far as the Laboratory is aware, a novelty. Thinness of the strip is essential, because it favors sensitivity and constancy of swelling and shrinking action.